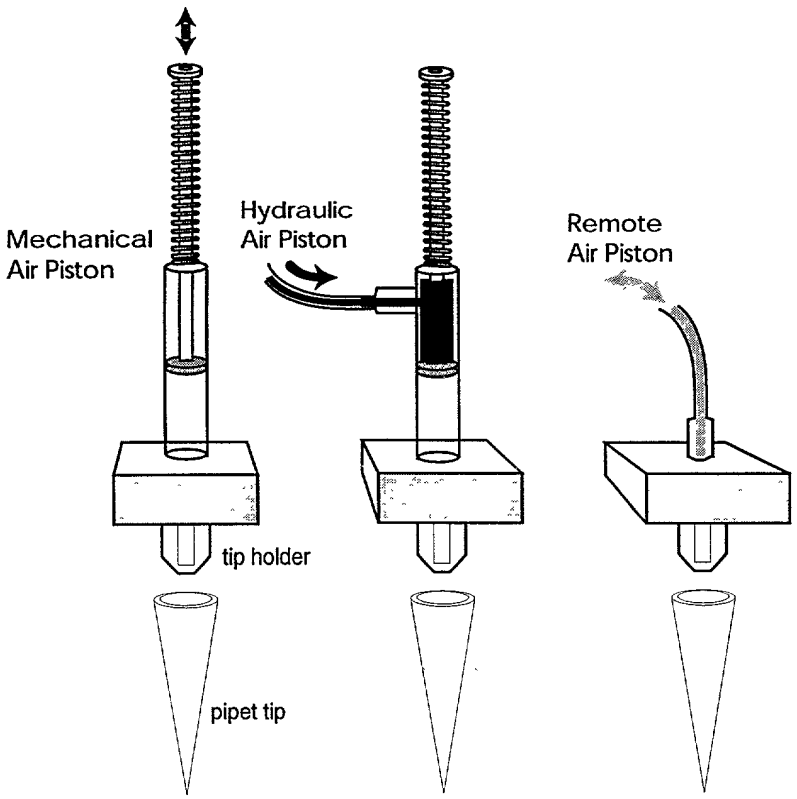


Fig. 1A

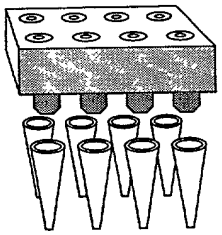


Fig. 1B

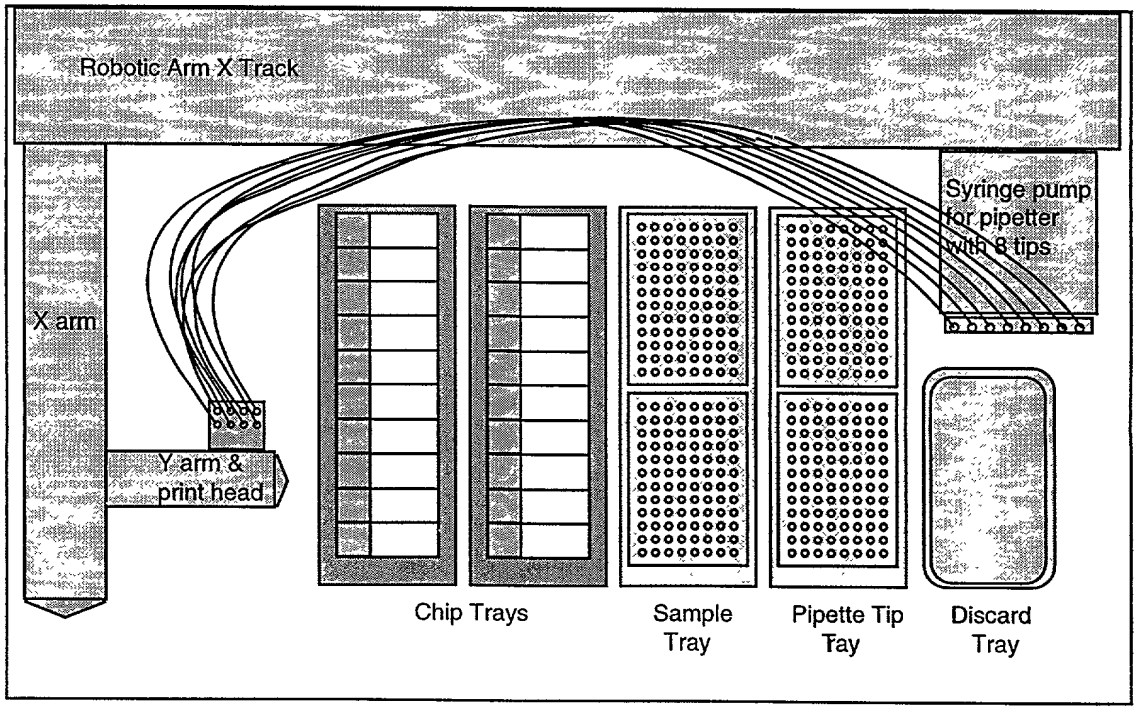
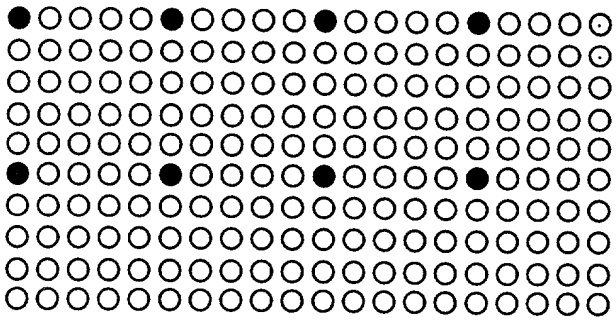
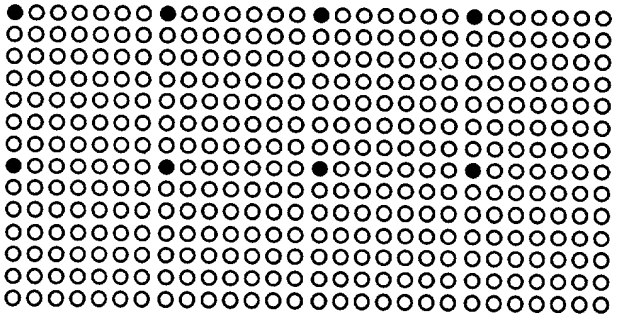


Fig. 2



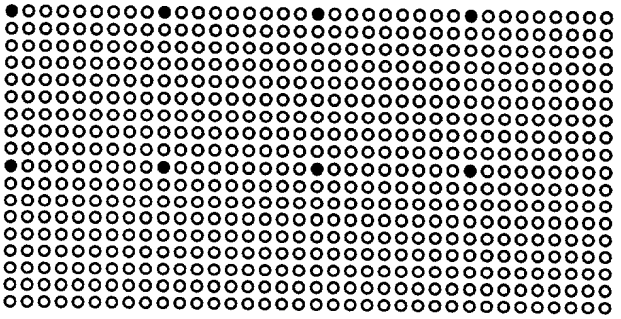
1.8 mm CTC

400 nL spots
spot diameter 1.2 mm
print spacing 1.8 mm CTC
25 passes = 200 spots
CTC area of 16.2 mm x 36 mm



1.285 mm CTC

200 nL spots
spot diameter 0.8 mm
print spacing 1.285 mm CTC
49 passes = 392 spots
CTC area of 16.71 mm x 34.71 mm



1.0 mm CTC

100 nL spots
spot diameter 0.6 mm
print spacing 1.0 mm CTC
81 passes = 648 spots
CTC area of 17 mm x 35 mm

Black dots represent the first print distribution with a 8 tip printhead having 2 rows of four tips. 50 nL spots similarly dispensed would achieve ~2500 gene spots in the same printing area.

Fig. 3

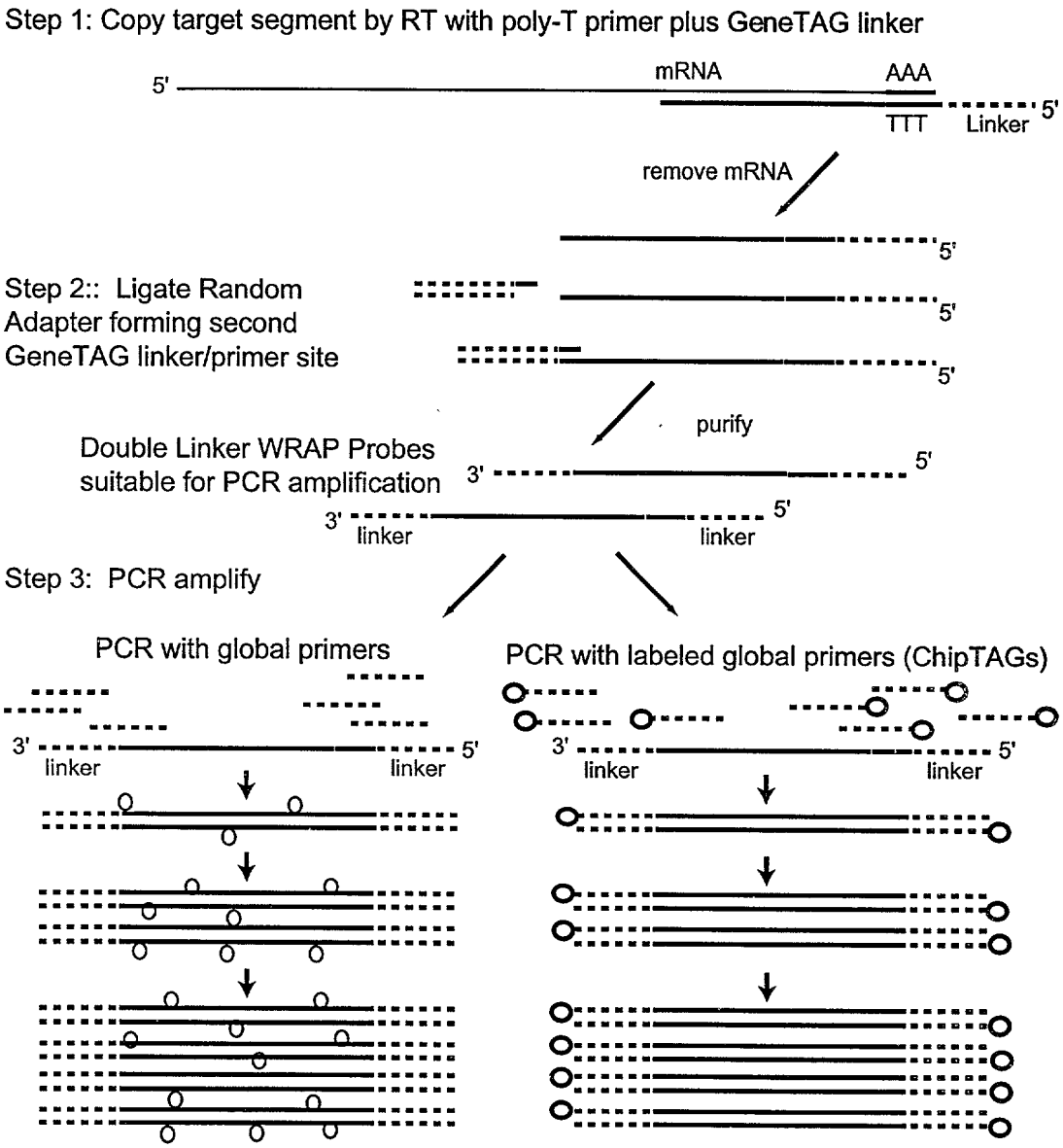

Step 1: Copy target segment by RT with poly-T primer plus GeneTAG linker
5'
mRNA
AAA
TTT
Linker
5'
remove mRNA
5'
Step 2:: Ligate Random Adapter forming second GeneTAG linker/primer site
5'
5'
purify
Double Linker WRAP Probes suitable for PCR amplification
3'
5'
3'
linker
linker
5'
Step 3: PCR amplify
PCR with global primers
PCR with labeled global primers (ChipTAGs)
3'
linker
linker
5'
3'
linker
linker
5'

Fig. 4

Hand spotted miniarray test
with P-10 micropipetter and
Cy3 and Cy5 labeled samples
on polylysine coated slides
spots ~3 mm CTC

Upper Row
600 nL, 400 nL, 200 nL
1.35mm, 1.2mm, .78 mm
Mid Row
800 nL, 400 nL, 200 nL
1.78mm, 1.2mm, .78mm
Lower Row
800 nL, 400 nL, 200 nL
1.78mm, 1.2mm, .78mm

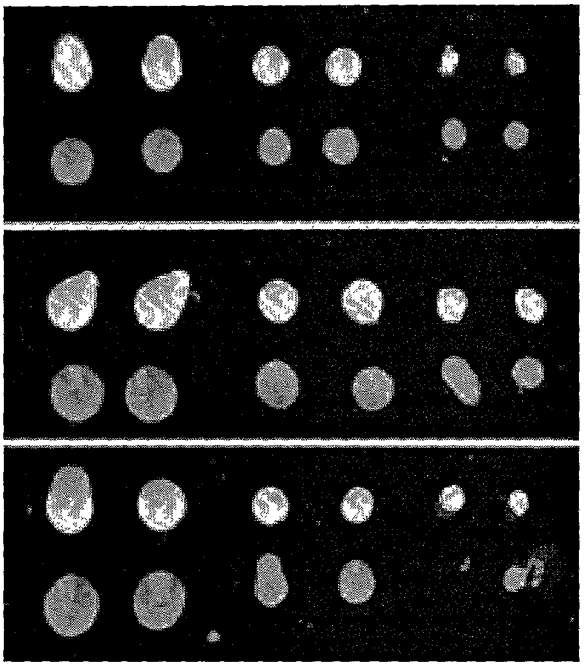


Fig. 5

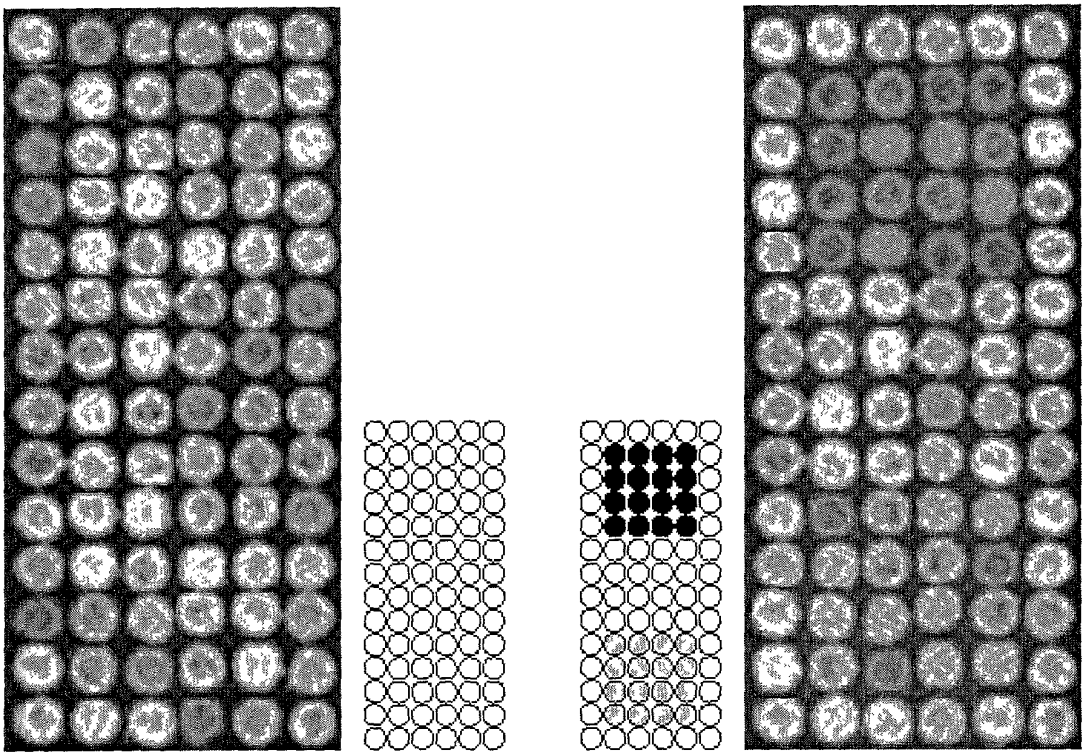


Fig. 6

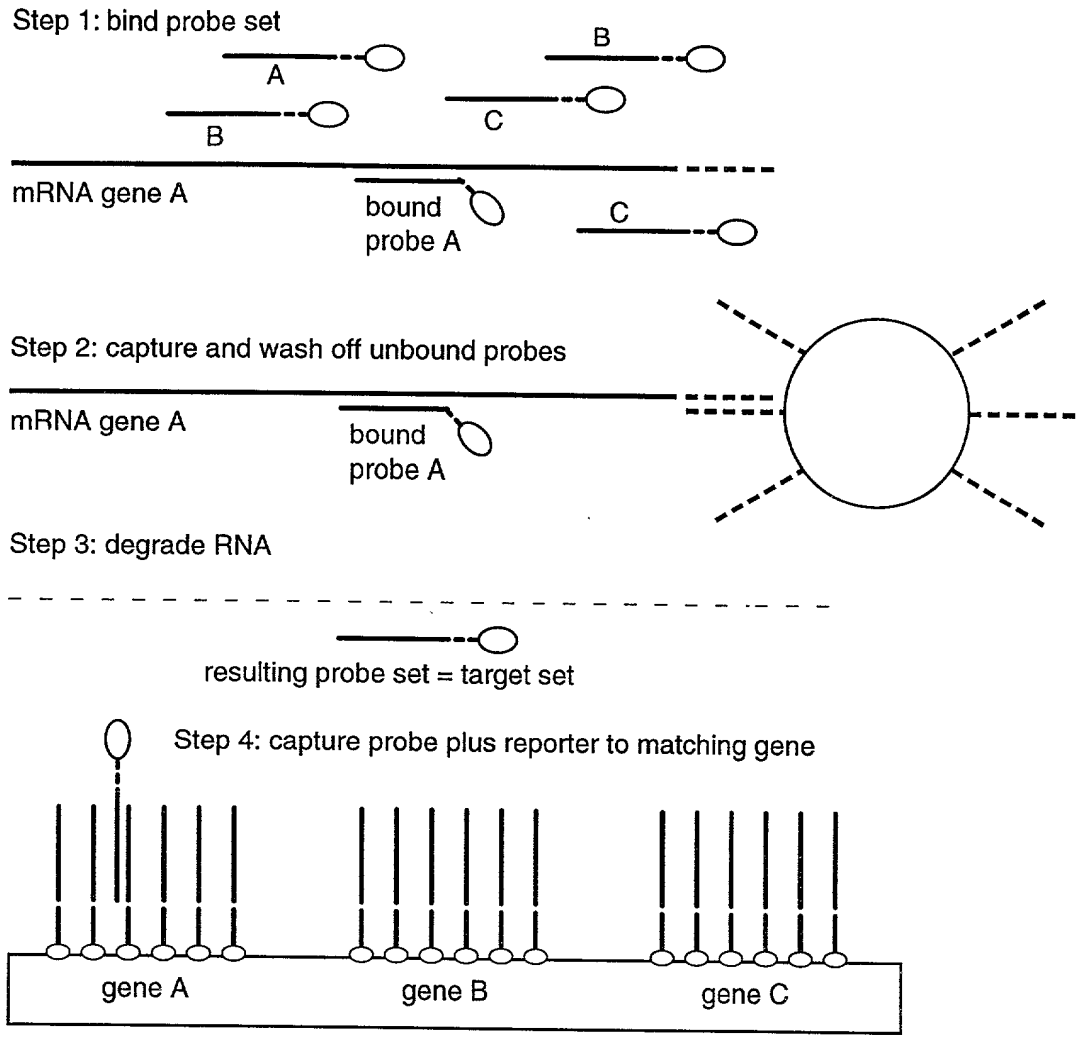
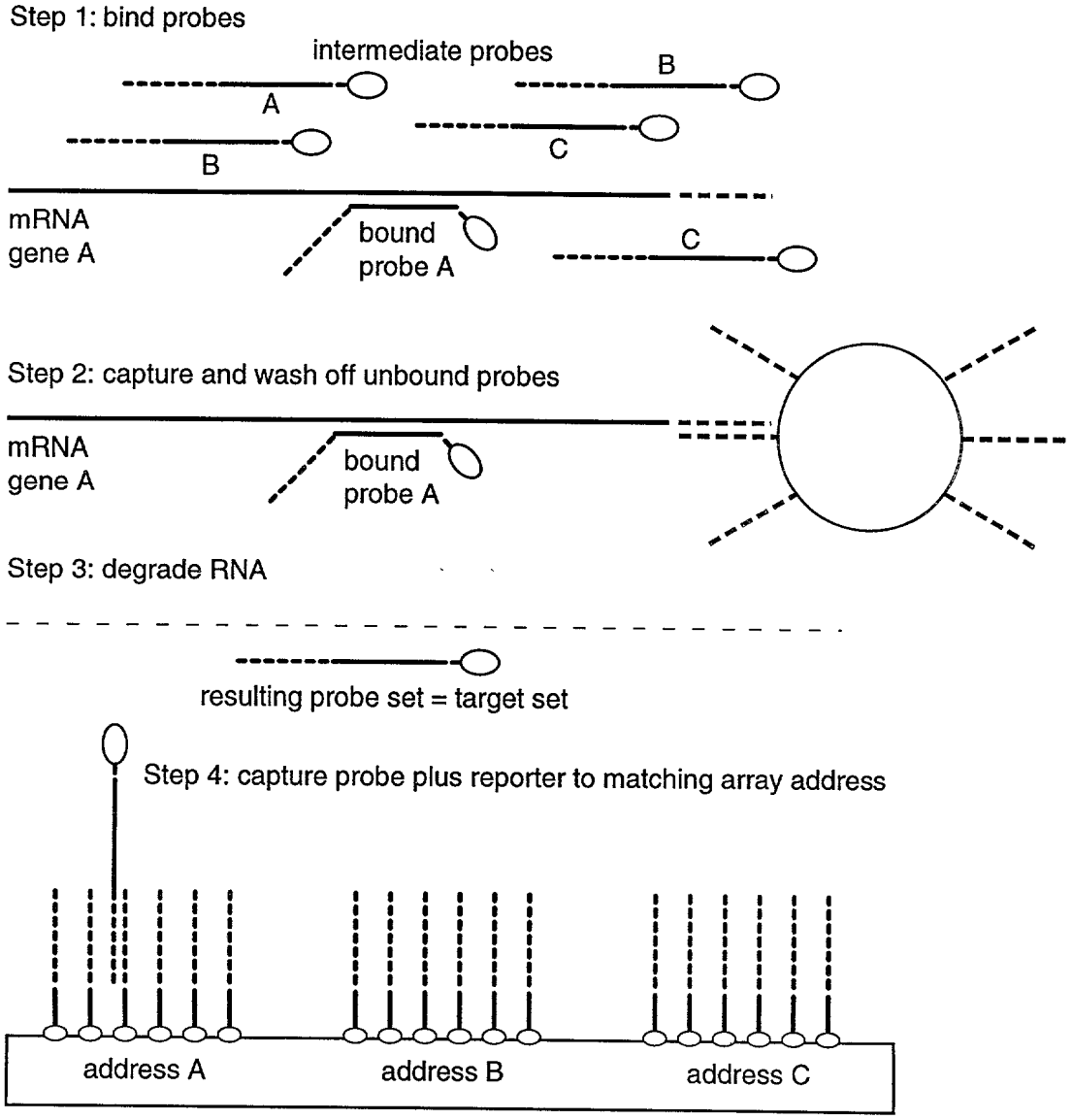
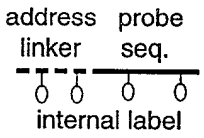

Step 1: bind probe set
A
B
B
C
mRNA gene A
bound
probe A
C
Step 2: capture and wash off unbound probes
mRNA gene A
bound
probe A
Step 3: degrade RNA
resulting probe set = target set
Step 4: capture probe plus reporter to matching gene
gene A
gene B
gene C
Alternate probe form: reporter bound separately to reporter linker
probe
sequence
reporter
linker
probe
seq.
reporter
linker
very short GeneTAG
Diagnostic Miniarray genes arranged to generate a
simple stoplight pattern if the condition is present
A B C
red cluster
yellow cluster
green cluster

Fig. 7

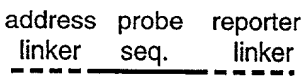


Alternate single Intermediate Probes:

a. labeled probe with address linker



b. unlabeled probe with address linker and reporter linker



c. reporters are bound after probes bind to miniarray address

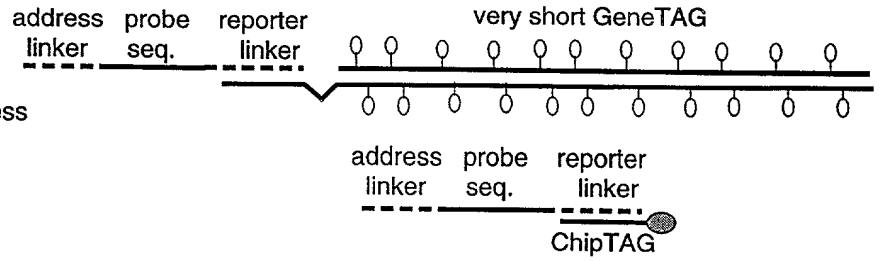
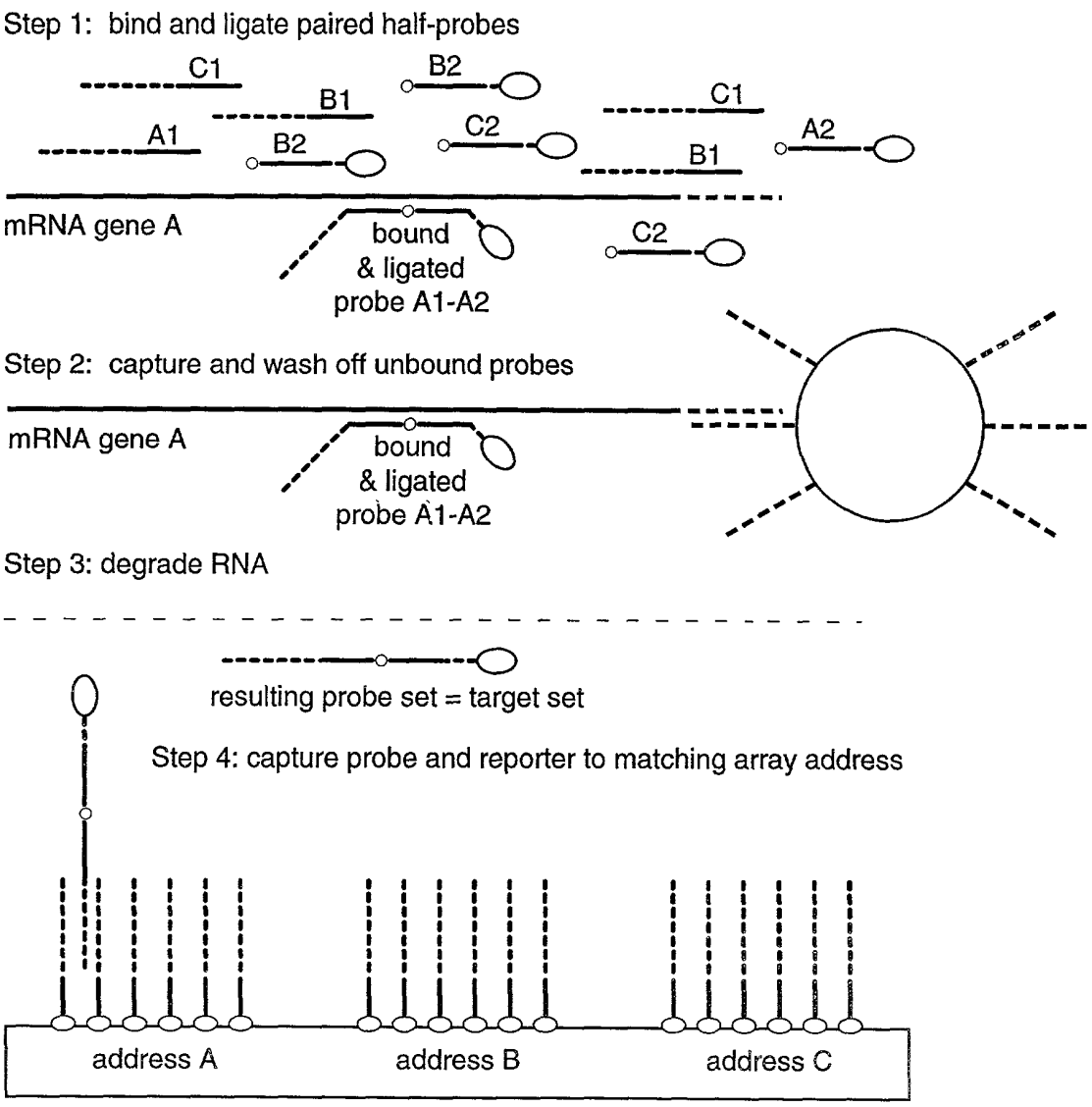


Fig. 8

Using intermediate half-probes ligated together on the target sequence:



Alternate Probe form: Reporter bound separately to reporter linker:

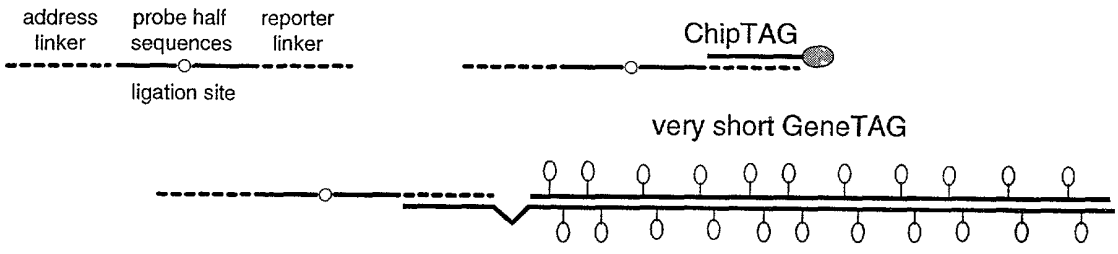


Fig. 9